



California
DEPARTMENT OF TECHNOLOGY

California Information Technology Annual Report 2016

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LETTER FROM THE STATE CIO AND DEPUTY STATE CIO



2016 has been a productive and innovative year for Information Technology (IT) in the State of California. Our IT community has greatly improved our capabilities – our people, our methodologies and our technology – to better serve all Californians. The California Department of Technology (CDT) and our partner agencies have taken great strides in securing our most important information assets, capitalizing on the latest technologies and approaches to IT, ensuring the success of projects and enhancing the core services we provide.

CDT, as the central and lead organization for the state's IT capabilities, led a process to identify the following strategic focus areas which will help enable CDT, and the state's IT community as a whole, to mature our IT service offerings while expanding capabilities by pursuing new approaches:

- **Organizational Sustainability**- Improving service delivery, fostering innovation, and providing customer-centric quality assurance.
- **Statewide IT Project Delivery**- Improving the planning, quality, value, and the likelihood of success for IT projects by working closely with state entities.
- **Statewide Information Security**- Protecting California's information assets by providing statewide leadership and collaborating with partner agencies in information security.



To implement these strategic focus areas we have established a common "North Star Goal" and a set of aspirational values to become "One CDT" with an integrated service strategy and commitment to delivery, innovation and quality assurance.

As we work with our state and local partners, the state legislature, and our industry partners, we continue to discover new ways to address the most critical needs in the business of government and provide our workforce and the people of California with user-centered digital services. We are pleased to highlight some of the technology accomplishments that the State of California has made in 2016. We expect 2017 will provide additional growth opportunities and challenges, however, we strongly believe that we can continue, together, to lead IT efforts that best serve the people of our state.

Handwritten signature of Amy Tong in black ink.

Amy Tong
Director, California Department of Technology
State of California Chief Information Officer

Handwritten signature of Chris Cruz in black ink.

Chris Cruz
Chief Deputy Director, California Department of Technology
State of California Deputy Chief Information Officer

ABBREVIATIONS AND ACRONYMS

BIS	<i>Business Information Solution</i>	DMS	<i>Debt Management System</i>
BOE	<i>Board of Equalization</i>	DOF	<i>Department of Finance</i>
Cal OES	<i>California Office of Emergency Services</i>	DPH	<i>Department of Public Health</i>
CalCloud	<i>California Department of Technology provided cloud services such as software, infrastructure and platform</i>	DTSC	<i>California Department of Toxic Substances Control</i>
Cal-CSIC	<i>California Cybersecurity Integration Center</i>	EDR	<i>Enterprise Data to Revenue Project</i>
Cal-CSIRS	<i>California Compliance and Security Incident Reporting System</i>	FedRAMP	<i>Federal Risk and Authorization Management Program</i>
CalEPA	<i>California Environmental Protection Agency</i>	FTB	<i>Franchise Tax Board</i>
CalHR	<i>California Department of Human Resources</i>	Github	<i>Online public repository and internet hosting service</i>
CalPERS	<i>California Public Employees' Retirement System</i>	HIPAA	<i>Health Insurance Portability and Accountability Act</i>
CalSAFER	<i>California Safer Consumer Products Information Management System</i>	IaaS	<i>Infrastructure as a Service</i>
CBIG	<i>California Business Incentives Gateway</i>	IRS	<i>Internal Revenue Service</i>
CCISDA	<i>California County Information Services Directors Association</i>	ISO (27001)	<i>Specification for an information security management system (ISMS)</i>
CDCR	<i>California Department of Corrections and Rehabilitation</i>	ITLA	<i>Information Technology Leadership Academy</i>
CDFA	<i>California Department of Food and Agriculture</i>	MC	<i>Medical Cannabis</i>
CDFW	<i>California Department of Fish and Wildlife</i>	MCRSA	<i>Medical Cannabis Regulation and Safety Act</i>
CDPR	<i>California Department of Pesticide Regulation</i>	MISAC	<i>Municipal Information Systems Association of California</i>
CDT	<i>California Department of Technology</i>	NIST	<i>National Institute of Standards and Technology</i>
CENIC	<i>Corporation for Education Networking in California</i>	OSI	<i>Office of Systems Integration</i>
CHHS	<i>California Health and Human Services Agency</i>	PaaS	<i>Platform as a Service</i>
CHP	<i>California Highway Patrol</i>	PII	<i>Personally Identifiable Information</i>
CMD	<i>California Military Department</i>	SSAP	<i>Streamline and Strengthen Accreditation Process Project</i>
CNRA	<i>California Natural Resources Agency</i>	STO	<i>State Treasurer's Office</i>
CTC	<i>Commission on Teacher Credentials</i>	SWRCB	<i>State Water Resources Control Board</i>
CWS-NS	<i>Child Welfare Services New System</i>	WCAG	<i>Web Content Accessibility Guidelines</i>
DCA	<i>Department of Consumer Affairs</i>		
DGS	<i>Department of General Services</i>		

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INTRODUCTION

California's Information Technology (IT) community provides critical resources to state organizations that in turn support the people of California. Maintaining, securing and improving these technologic resources requires constant and coordinated diligence from many stakeholders. This Annual Report highlights the 2016 technology accomplishments of the State of California's IT community in four primary imperatives:

- 1. Ensuring Security of Sensitive Information Assets** – In collaboration with its partners, the State of California has established a Cybersecurity Defense Vision. This partnership has improved the state's security posture and enabled the continuous enhancement of security intelligence to reduce the likelihood and severity of cyber incidents that could damage California's economy or critical infrastructure. CDT has also taken the necessary steps to enhance its Information Security Program to focus on prevention and education. Historically, information security was measured by compliance to hundreds of security controls that were difficult to manage and almost impossible to report. The Information Security Program has developed a new framework with a simplified set of objectives that state entities can work toward. The framework will be used to track, assess, manage and report on all aspects of the enterprise security architecture.
- 2. Fostering Innovation and Partnerships** – The State of California is a thought leader in the country and a model for other government entities in providing innovative tools for its partners. IT capabilities and options continue to advance, and expectations of state government and consumers of IT services grow in response. Workers and consumers expect modern, reliable, secure, innovative and regulatory compliant solutions. State IT continues to bring government closer to its people through the availability of the best solutions, and access to non-confidential government data that enables informed, data-enabled decisions. Access to new and growing open data portals are starting new conversations about growth and progress. Additionally, the state continues to migrate to a unified cloud infrastructure that provides flexibility, scalability and government-level security to state entities, allowing them to evolve and expand their business practices when and how they need it.
- 3. Enabling Successful IT Project Establishment and Delivery** – California, like every state, is reliant on IT projects to implement new and modern technology to support its business needs. The State of California currently manages more than \$3.5 billion in active IT projects to bring contemporary, stable, working solutions to its business partners. As technology evolves, so does the state's approach to IT project establishment and delivery. California is augmenting proven and mature approaches with new collaborative methods to plan and implement projects. The overarching goal, as always, is to ensure that California achieves its business objectives and provides the best value for the people of California. In all cases, projects are planned and overseen to ensure that each uses industry best practices and effectively manages risk.
- 4. Providing Sustainable and Efficient Business Enablement Services** – California's IT services are critical to the business of government – from health care services to fighting fires to protecting the environment. Providing mission-critical systems requires a highly capable workforce and innovative technology; state IT is focused on maintaining scalable and flexible IT capabilities, and enhancing the expertise and relevance of IT professionals through education, knowledge-sharing and creating communities of interest.

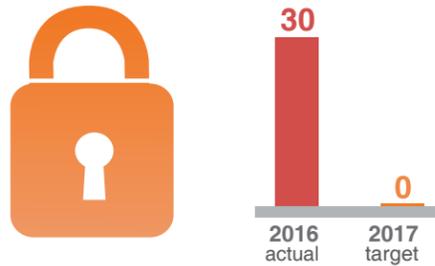
California's IT community has proven that it can execute on its mission, and is prepared to discover new ways to address the state's most critical needs in the business of government. Technology will continue to evolve and the State of California, along with its partners, will continue to enable its workforce and residents to provide effective services and make the wisest, most informed decisions.

Creating Business Value through Technology

CDT, in collaboration with state executive and legislative stakeholders, has redefined how the state will measure its IT effectiveness against its strategic goals and objectives. In the four primary domains on which state IT currently is focused, the metrics depict the IT organizations' performance against their goals: Ensuring Security of Sensitive Information Assets, Fostering Innovation and Partnerships, Enabling Successful IT Project Establishment and Delivery, and Providing Sustainable and Efficient Business Enablement Services. These IT Performance Metrics are a collaboration among CDT and the reporting IT organizations within state government. The 2016 measures are shown as reported by agencies and departments or the entities responsible for their management. 2017 measures are defined targets for the state.

SECURITY

Number of electronic incidents resulting in the unauthorized disclosure of personal information



The number of breaches during the calendar year that involved Personally Identifiable Information (PII) contained in lost or stolen unencrypted electronic devices and storage media. This number does not include paper and verbal releases of information.

Blocked Attempts to breach and/or access data center systems hosted at CDT without authorization



The success rate of the state in preventing unauthorized access to critical and sensitive data in the state data center.

Outages or disruptions of mission critical or public facing systems



The number of reported security incidents that resulted in the unavailability of information systems for more than two hours.

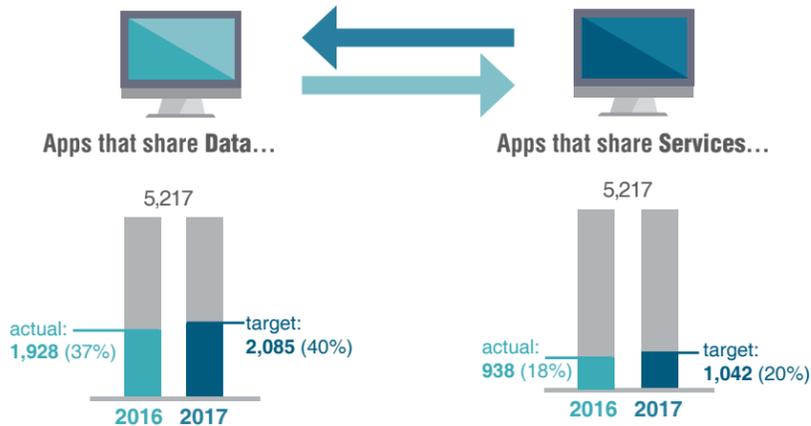
INNOVATION

High Value Data Sets Available to the Public



The number of data sets available to the public. High value data sets increase state entity's accountability and responsiveness, increase public knowledge, improve operations, further the core mission, create economic opportunity, and/or respond to needs and demands identified by the public.

Shared Data and Services

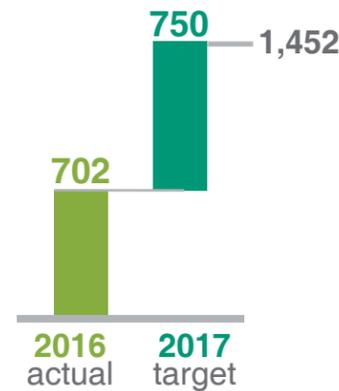


The number of business applications that provide information to other business applications is rising.

The number of applications that have published technical services available for use by other applications.

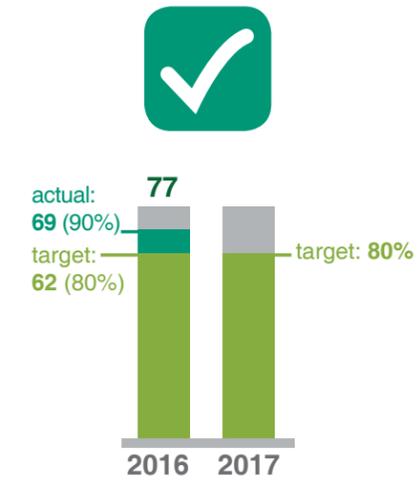
PROJECT DELIVERY

Number of people completing project management & procurement training



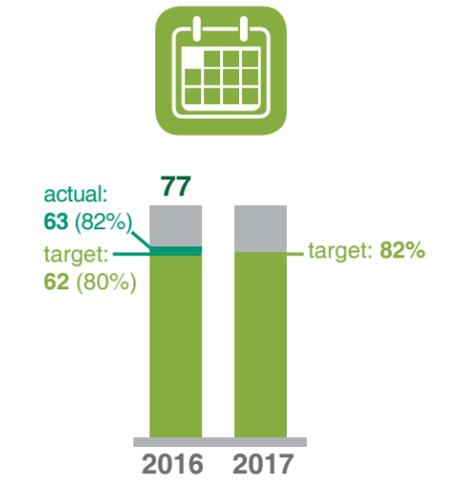
The number of professional state project stakeholders who have taken an active role in improving their project management and procurement skills.

Projects Completed Within Schedule.
(no more than 10% variance)



The key business outcomes identified at the inception of a project and evaluated soon after the project is completed.

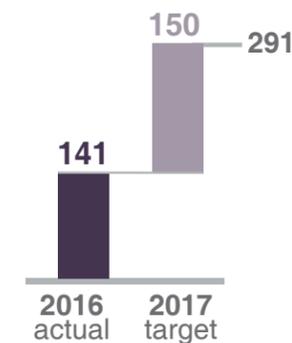
Projects Completed that met ≥ 90% of Business Objectives.



The timeliness with which projects are completed against the latest approved schedule.

EFFICIENCY & SUSTAINABILITY

Number of people completing IT leadership training



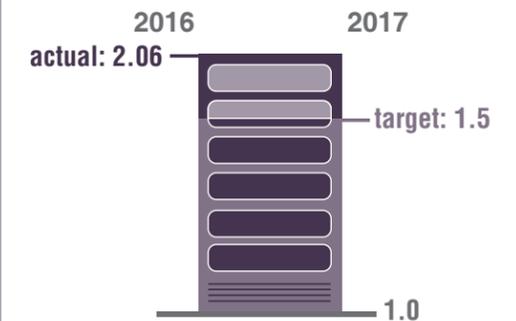
The number of state IT professionals completing IT leadership training.

Percentage of Virtualized & Cloud Computing Infrastructure



The number of servers that are prepared to perform in a state cloud environment.

Power Utilization Effectiveness for data centers +1,000 sq. ft.



Within all 27 state data centers that are greater than 1,000 square feet, the amount of energy used directly by computers as compared to all other energy uses (1.0 is the goal, though theoretically unachievable).



ENSURING SECURITY OF SENSITIVE INFORMATION ASSETS

The number of cyber attacks has increased significantly across the world in both the private and public sectors in recent years. Given the size of California's economy, as the sixth largest economy of the world, the state is a prime target for similar information security breaches. In 2016, the State of California strengthened California's preparedness and response to cyber-attacks. Through the support and collaborative efforts among the CDT, California Office of Emergency Services (Cal OES), California Highway Patrol (CHP), and California Military Department (CMD), the state led and engaged in complementary initiatives that will fortify its security posture and position itself to enhance security analytics solutions. As cybersecurity threats become more sophisticated, the state will continuously strengthen its security policies and standards to provide clear direction and guidance to state entities for the protection of confidentiality, integrity, and availability of California's information and assets. The synergy of this partnership will bolster the security posture of the state by improving proactive threat intelligence, incident response, and the identification of vulnerabilities with California's mission critical systems.

Threat Monitoring and Incident Response

Cybersecurity attacks are constantly evolving and becoming more sophisticated, requiring the state to be nimble and one step ahead of attackers. In August 2015, Governor Edmund G. Brown Jr. signed [Executive Order B-34-15](#), which directed Cal OES to establish the California Cybersecurity Integration Center (Cal-CSIC). Cal-CSIC's primary mission is to improve inter-agency, cross-sector coordination to reduce the likelihood and severity of cyber incidents that could damage California's economy, critical infrastructure, or public and private sector computer networks. Cal-CSIC is an organizing hub of state government's cybersecurity activities and coordination. Its establishment puts California at the forefront of cyber threat intelligence and incident response.

Four primary outcomes are envisioned for Cal-CSIC:

- 1. Actionable Intelligence:** The use of timely, accurate, and relevant intelligence to enhance decision-making and security of the state networks.
- 2. Network Resiliency:** The ability to disseminate security controls and alerting rules directly to partner networks and increase their resilience.
- 3. Incident Monitoring and Response:** Visibility into incidents affecting the state, and the ability to provide support to critical incidents as they arise.
- 4. Security Solutions Engineering:** The ability to support partners by integrating Cal-CSIC security solutions into their infrastructures.

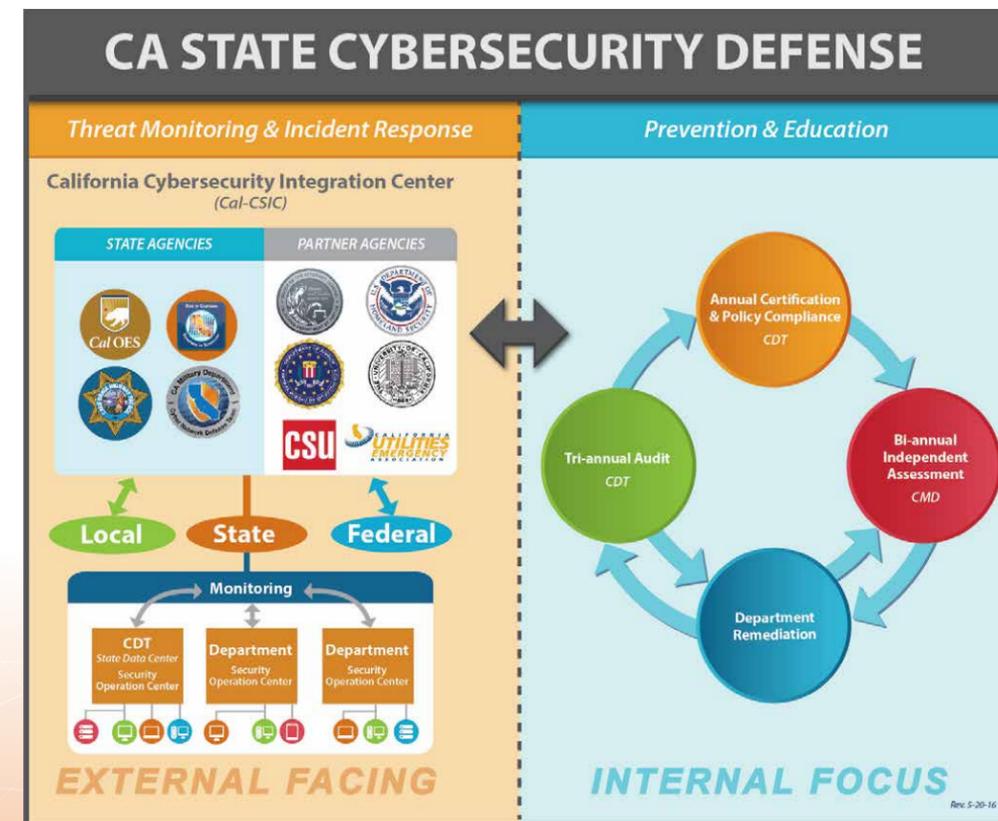
Over the next few years, Cal-CSIC will continue to evolve and grow, adding additional partners – from Executive Branch organizations to universities, utilities, and hospitals – until it reaches full integration across the state. These partnerships will enhance the availability of incident data and provide the state with a real-time awareness of risks, which will allow the state to predict threats and proactively defend its networks against attacks.

Prevention and Education

Information security policy plays a critical role in the State of California and is vitally important to state government operations and service delivery. The security and privacy risk landscape is constantly changing, and the state must build resilience to adapt to these threats. CDT is the primary state government authority responsible for establishing policies for confidentiality, integrity, and availability of state systems and applications. To remain at the forefront, CDT adopted a Program Management Framework that shifts the state from a compliance-based practice to one that protects the highest value assets through a management and risk-based approach. This provides a simplified set of 30 objectives mapped to 12 domains that security practitioners can utilize as focus areas for building a security program. The Framework also allows state entities to assess, manage and mature their security posture against target business objectives, ensuring that confidential and sensitive data are properly safeguarded.

Assembly Bill 670 (Irwin, 2015) requires CDT to coordinate 35 vulnerability assessments each calendar year. State entities will undergo these independent security assessments every two years based upon CDT's assessment criteria. The primary provider for this service is the California Military Department. The resultant data is presented to the assessed state entity and CDT to allow them to implement and track remediation efforts.

In addition, CDT initiated an Information Security Audit Program to measure the effectiveness of its statewide policy and guidelines. The driver for the audit program is the need to assure that state entities are implementing appropriate administrative, operational and technical information security safeguards. CDT piloted this program in six state entities in 2016.



The state has taken a unified approach to its cybersecurity strategy. Close coordination and trust among partners is paramount to strengthening the State's security posture.

Did You Know?

A unique feature of CalCloud Infrastructure as a Service (IaaS) is its security model. CalCloud IaaS is the only state government cloud that can meet multiple rigorous international and government regulations (e.g., adhering to the FEDRAMP Framework, NIST 800-53, ISO 27001, IRS 1075, HIPAA.)

Additionally, CDT has established a Security Operations Center to enhance its ability to effectively analyze, identify, and respond to the growing complexity and volume of cybersecurity threats.



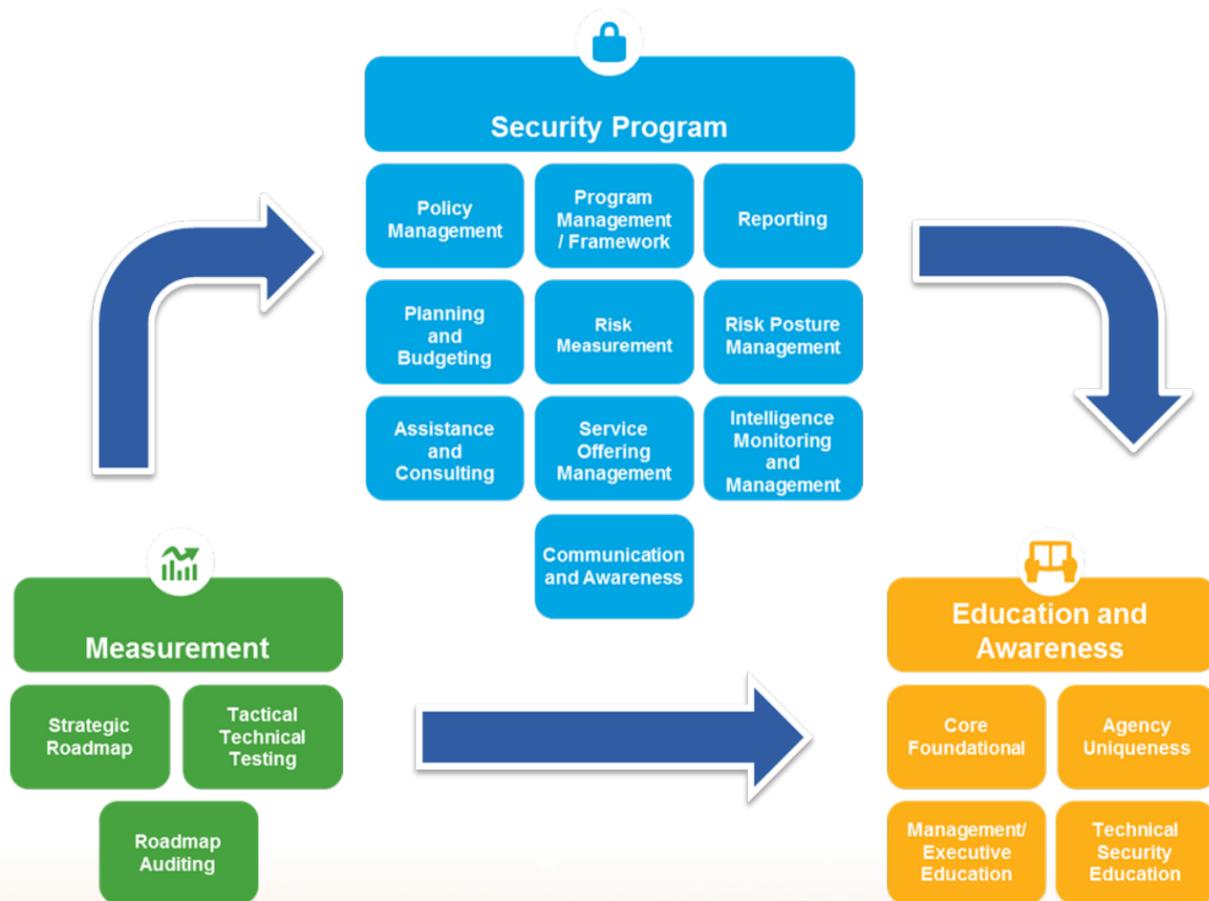
Information Security Policy Program

The Information Security Policy Program will empower state entities to mature their security posture pro-actively to address any deficiencies and prevent security incidents before they occur:

Security Policy Program expands existing program services, improves communications between security stakeholders and provides assistance and consultation when requested to address security deficiencies. In May 2016, CDT replaced manual and redundant incident reporting processes with the California Compliance and Security Incident Reporting System (Cal-CSIRS), an automated security compliance and reporting system.

Measurement aligns the assessment and auditing processes to provide a transparent and comprehensive understanding of security postures and to identify opportunities for improvement. Assembly Bill 2623 (Gordon, 2016) requires state entities to report their actual and projected information security costs annually. The Program Management Framework coupled with the availability of information security costs will provide greater visibility into the investments the state makes to improve its security posture.

Education and Awareness expands training and education to advance the skills and knowledge of the state's security professionals and strengthen the overall integrity of the state.



The Information Security Program provides a comprehensive set of business capabilities in support of state entities.

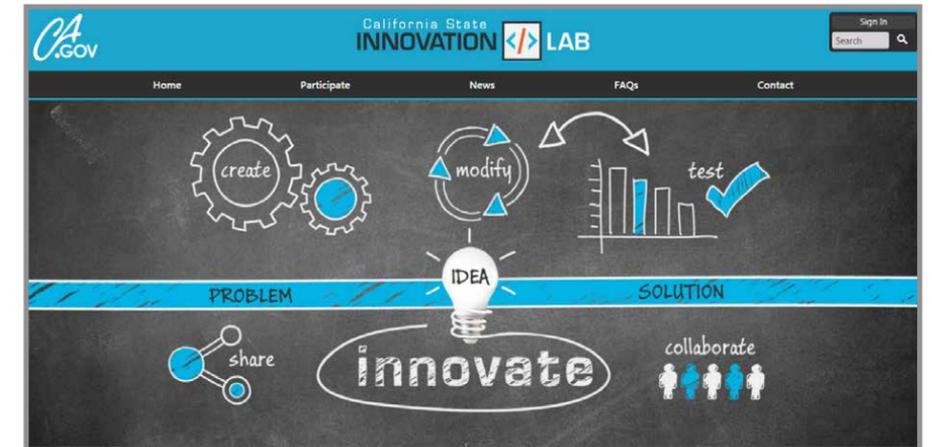


FOSTERING INNOVATION AND PARTNERSHIPS

Today's leading organizations continue to be successful by preparing for what the world may look like tomorrow. State government is no exception, and California can no longer afford to be reactive. The state is evolving to be a thought leader and model for other government entities. A key enabler of being at the forefront is the ability to innovate, whether in the realm of new information-supported business programs and processes or the field of tangible technology solutions.

Digital Innovation

Driving the state forward as a thought leader and technology innovator, CDT, in collaboration with the Government Operations Agency, launched the Office of Digital Innovation to foster a culture of innovation and encourage engagement between government and the people it serves. Based on the principle of transparency, the office provides a foundation to develop and deploy cost-effective and efficient products that best meet the needs of California residents.



Visit the California Innovation Lab at: <http://innovate.ca.gov/>

The first major initiative this office undertook was the establishment of the California State Innovation Lab, which serves as a virtual "tech habitat" for California government to build, test and deploy open source technologies within the state's data center. The goal of the Lab is to create innovative, deployable technologies that address needs identified by state entity partners. Understanding that innovation involves some trial and error, the Lab provides a safe environment where participants have the freedom to use unique or unconventional methods or solutions; initial failures are accepted as part of the process and participants can quickly move on to try a new approach. California is the first state to launch an innovation lab and expects other states to quickly follow its lead.

To ensure these investments are used to maximum benefit, CDT will issue a new policy in 2017 to ensure software code developed using state funds will be made broadly available for reuse to other state entities free of charge as open source.

Realizing the Value of Transparency and Open Data

State government captures massive amounts of data across a multitude of programs – a natural result of providing services to more than 38 million Californians. Recognizing that data is an asset, the state is committed to maximizing the value that this data can provide and its potential to improve the lives of Californians. Making information accessible to the public provides faster and more efficient information sharing with residents and state partners.



Visit California's Open Data Portal at: <http://data.ca.gov/>

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High-Value Data Sets Are Available to the Public

Did You Know?

CDT issued policy (Technology Letter 16-09)² to formally establish the state's commitment to an effective and collaborative partnership with California Indian Tribes. This commitment ensures policies, rules, regulations, programs, projects, plans, and activities appropriately consider the needs of tribal communities. The state is committed to strong and sustainable government-to-government relationships, and encourages proactive and ongoing communication with Tribal representatives regarding issues pertaining to or impacting Tribes.

The state has taken a strategic and methodical approach to exploring open data and has launched several open data portals that house high value data sets. Under the leadership of the Government Operations Agency, CDT has established a statewide open data portal – data.ca.gov – to ultimately link all high value open data sets from various state portals and make them available to the public. As this open data platform evolves, CDT will focus on enhancements to data.ca.gov to move beyond simply providing access to open data on the website to encourage use of the data to drive progress in the state.

Health and Human Services Data

The team behind the data.ca.gov site built on expertise developed by the California Health and Human Services Agency (CHHS), which created a health-centered portal in 2014 and has steadily added data sets produced by all CHHS departments. The breadth of data captured by departments and offices within the CHHS lends itself to promoting innovation and collaboration with external stakeholders as well as CHHS departments and other state entities.

As part of this process, CHHS also developed the CHHS Data Playbook¹ to document and further promote an organizational culture focused on data-driven decision making. The Playbook is a mechanism to disseminate best practices, a strong governance structure and lessons learned across the Agency, consisting of resources and toolkits to help staff navigate data projects and discuss data-related topics with common terminology. The Playbook is shared on GitHub, an online public repository, so other organizations can leverage and adapt it for their needs.

CA.gov Revitalization

Under the leadership of the Government Operations Agency, in partnership with CDT, CA.gov was redesigned to better service Californians and provide an updated look for the state's primary online entry point. The design team used Web tools to identify specific information that users were looking for and designed the site to promote those items, including the state's top 50 online services. This consistent foundation provides focused and efficient access to useful information, enabling users to quickly reach their desired destination. Additional enhancements will be made to the portal over the next year to meet the growing needs of Californians, including greater integration across state entity portals, targeting information to users' physical locations, and expanding analytic capabilities to gather actionable feedback on the site's effectiveness.



Business Incentives Portal

The State Treasurer's Office developed the California Business Incentives Gateway (CBIG) which allows businesses to search for available economic incentives in a single place using basic demographics such as business consumer, incentive type, and category. In addition to the 14 boards, commissions and authorities chaired by the State Treasurer, the site hosts incentives from many California state, and local governments. Results can be viewed, filtered and sorted as needed to make best use of economic incentives. CBIG was implemented in December 2016, with more local government incentives being added over the next 6 months.

Updated Accessibility Standards

CDT partnered with the California Department of Rehabilitation to update the IT Accessibility Resource Guide and align these standards with the World Wide Web Consortium's Web Content Accessibility Guidelines (WCAG) 2.0. State law directs all state entities to comply with Section 508 of the federal Rehabilitation Act of 1973. State entities are responsible for ensuring that their public websites comply with accessibility requirements and their internal IT systems are accessible by state employees with disabilities.

Rapid Solution Development

The California Natural Resources Agency uses a common solution platform to rapidly develop and deploy many of the new applications needed for the Agency. These recently have included enterprise applications such as Ground Water Well Permitting and Coastal Commission Permitting. The tool, combined with rapid prototyping and development methodology, has allowed the Agency's IT department to be highly responsive to business units without excessive cost or risk.

Connecting with Local Governments

The State of California actively collaborates with the California County Information Services Directors Association (CCISDA) and the Municipal Information Systems Association of California (MISAC) on shared services with local entities. In 2016, a new partnership was established between CDT and the Corporation for Education Networking in California (CENIC). CENIC is a non-profit organization comprised of 10,000 education and research member institutions.

CENIC operates the California Research and Education Network (CaIREN), a high-capacity network designed to meet the unique requirements of more than 20 million users. In order to establish this partnership, CDT signed a long-term fiber sharing agreement with the City of Sacramento that enables the state to use Sacramento's fiber assets and allows all CENIC members to leverage the State of California's technology service offerings. This groundbreaking agreement allows both organizations to utilize existing infrastructure, reducing expenses for third party providers.

“Thanks to Sacramento’s willingness to collaborate on solutions across government entities, this agreement will play a significant role in improving the delivery, efficiency and security of government services in the State of California.”

- Chris Cruz, Deputy State CIO



The City and County of San Francisco has partnered with CDT to leverage CalCloud to supply Disaster Recovery functionality for their financial and accounting management systems. This collaboration between state and local government highlights the increasing number and types of opportunities that technology advancements can bring.

Did You Know?

The state has begun transitioning enterprise email and other productivity applications to a single statewide cloud-based email system, which will improve interdepartmental collaboration on cross organizational projects and initiatives. 40,000 mailboxes have been migrated as of November 2016. An additional 140,000 will be migrated by December 2017. When the transition is complete, the state will be using a common set of state of the art office productivity tools.





ENABLING SUCCESSFUL IT PROJECT ESTABLISHMENT AND DELIVERY

California, like every state, is reliant on IT projects to implement new and modern technology to support its business needs. State entities currently manage more than \$3.5 billion in active IT projects³ to bring contemporary, stable working solutions to support government services. As technology evolves, so must the state’s approach to IT project establishment and delivery.

The state continues to augment existing approaches that are proven and mature with new, collaborative and innovative methods to plan and implement projects and ensure that the state achieves its business objectives while providing the best value for its residents. In doing so, CDT engages state entities at various points throughout a project’s lifecycle to provide support, guidance and oversight early in a structured and supportive manner to reduce risk, and increase the likelihood of timely success.

To maintain and improve upon these successes, CDT is collaborating with state entities on IT projects to provide the right resources when they are needed, and offer additional specialized resources should the project team need them. Additionally, CDT has led efforts to improve existing processes and developed new standards and methodologies which fall into four primary efforts:

- Enhancements to the Project Approval Lifecycle
- Consistent, Streamlined and Useful Project Management Standards
- Providing Resources to Support Projects
- Effective Project Oversight and Risk Management

Enhancements to the Project Approval Lifecycle

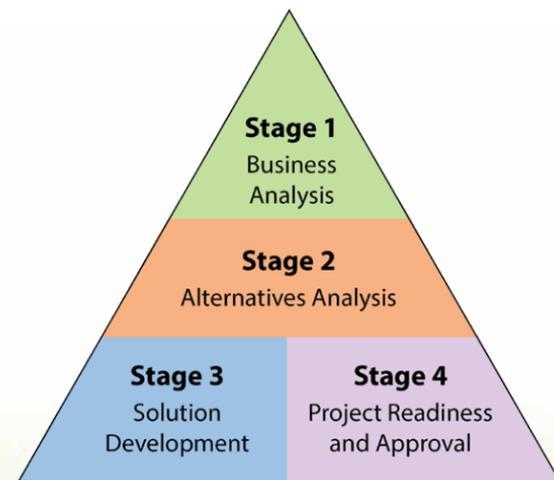
CDT, in collaboration with state entities across California, replaced the decades old Feasibility Study Report (FSR) approval process with the Project Approval Lifecycle (PAL). The new PAL process will result in more realistic estimates of project costs and schedules, bring forward technology that is better aligned with users’ needs, and help reduce risk of project failures. Additionally, this process will transform CDT’s traditional oversight role by promoting shared responsibility for project success between state entities and oversight managers through collaborative partnerships. The new process includes:

Stage 1 Business Analysis: Identifies the business problems or opportunities and the objectives to address them.

Stage 2 Alternatives Analysis: Provides a basis for how the proposal’s business objectives will be achieved, an evaluation of multiple alternative solutions, which determines which alternative will yield the highest probability of meeting the business objectives, and the acquisition strategy for procuring services.

Stage 3 Solution Development: Defines detailed solution requirements and prepares the solicitation deliverable to acquire a solution that best meets the project’s business objectives and yields the highest probability of success.

Stage 4 Project Readiness and Approval: Identifies how the intended awardee will contribute towards the successful achievement of the project’s business objectives and ensures the state entity’s readiness to execute the project and establish realistic schedule and cost baselines.



The four stages of the PAL process help projects navigate the necessary gates for successful planning.

Each stage concludes with a “gate” where project managers and oversight staff validate proper planning has occurred and reach a go/no-go decision point. These gates provide the state and project team the opportunity to stop the project, or to revise the project approach before continuing further.

Consistent, Streamlined and Useful Project Management Standards

The California Project Management Framework (CA-PMF) was developed to improve the processes, tools, templates and leverage the collective knowledge of past projects to plan and guide current projects through their lifecycle. The CA-PMF provides state project management practitioners with guidance and access to user-centric and scalable tools and templates. The CA-PMF and associated training is available via an intuitive website. The application of industry best practices, lessons learned, and standardized processes by state project management practitioners is resulting in significant risk reduction for projects. This increases the probability of meeting projects’ business objectives, reduces the time it takes to meet those objectives, and provides a significant positive cost impact.



Visit the California Project Management Framework at: capmf.cio.ca.gov

Providing Resources to Support Projects

CDT also helps to ensure that changes in quantity and experience of project staff available to state entities does not lead to variations in project outcomes. Each project should have access to the right resources it needs to successfully achieve its business objectives, on schedule and within budget. Recent additions to CDT’s services catalog include services that state entities may leverage to supplement project managers, subject matter experts for technical, organizational and process domains, and consultants, as needed to ensure project success.

Effective Project Oversight and Risk Management

CDT views its statutory project oversight responsibility as a critical enabler of project success. However, CDT and its customers have identified numerous opportunities to improve how and when that oversight occurs. Project Oversight is a critical component of project delivery and improves planning, quality, value, and the likelihood of success of technology projects. CDT staff partners with each department to provide “guardrail” services and enhance risk management by leveraging statewide experience to coach and guide departments through the many challenges state projects often face.



The Commission on Teacher Credentials (CTC) has leveraged CDT project managers to help successfully deliver their Streamline and Strengthen Accreditation Process (SSAP) project. This project is designed to strengthen and inform the Commission’s decision making process and greatly reduce documentation required for the accreditation process. CDT resources have been a critical success factor for all aspects of the project.

Did You Know?

CDT has developed guidance and tools to support statewide technology projects.

“Understanding Agile” is the first release of a three-part series on Agile. It features agile principles, values, and recommendations based on best practices. This resource and others are available at:

www.projectresources.cio.ca.gov/Agile/index.html

Project management videos are available to everyone on a variety of topics

www.cio.ca.gov/opd/project_academy



Business Focused Architecture

When identifying business problems and crafting process and technical solutions to address them, state entities often look only within their own organizations. This has produced redundant processes and technologies that do not best meet the needs of the state as a whole. State entities have recently renewed their focus on collaboration to establish consistent and integrated processes, share information, and share or reuse existing state technology. As a result, the state is seeing better outcomes for residents and wiser technology investments. Today, 37 percent of applications within the state provide data to other applications, though only 18 percent share technical services with other applications. Although these numbers demonstrate progress in effective collaboration and coordination, they must continue to improve to provide services and information to the state's residents, businesses, and workforce when it is most needed to make the wisest decisions. In 2017, the state expects 40 percent of applications to provide data to other applications and 20 percent to share technical services with other applications.

Coordinated Planning Across Government

With the passage of the Medical Cannabis Regulation and Safety Act (MCRSA) in 2015, the state found itself in need of new programs, business processes, and technology to implement the legislation. This Act involves many state entities, including:

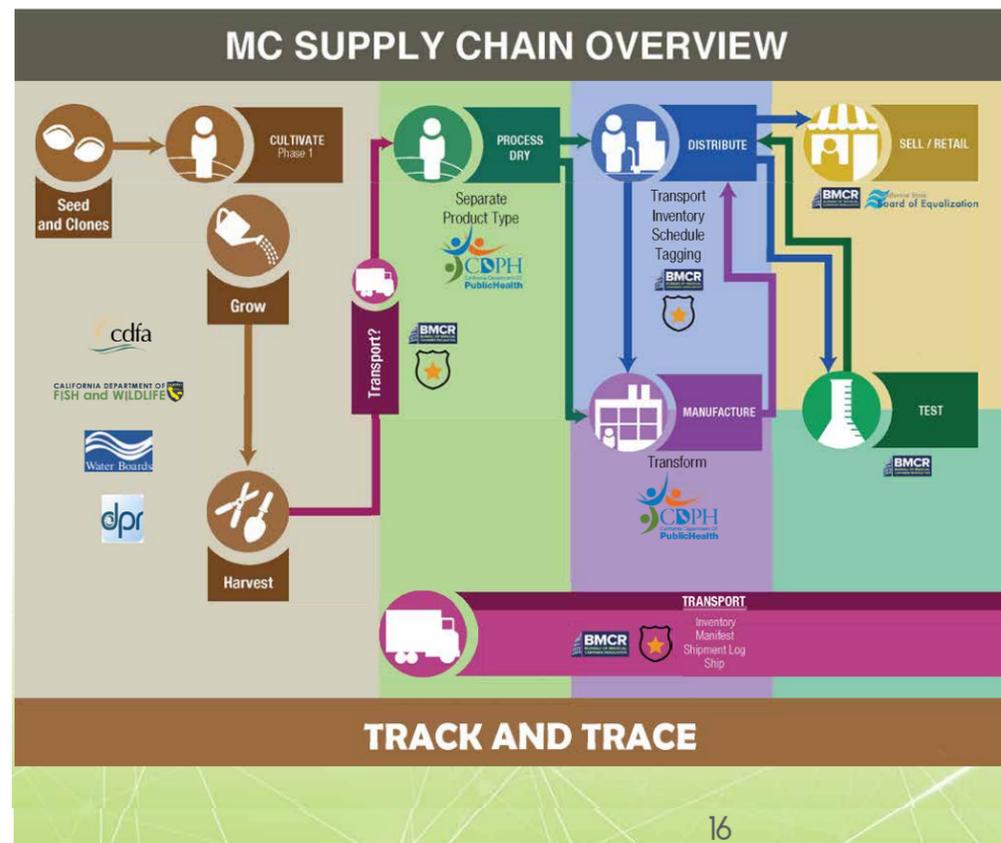
Department of Consumer Affairs, through the new Bureau of Medical Cannabis Regulation, acts as the lead agency and is responsible for licensing Transporters, Dispensaries, Distributors, and Testing laboratories.

Department of Food and Agriculture is responsible for Cultivation and the lead for the Track and Trace system with the assistance of the Bureau of Medical Cannabis Regulation.

Department of Public Health is responsible for licensing manufacturers.

Other state entities involved in this effort include Department of Finance, Board of Equalization, Franchise Tax Board, California Highway Patrol, Department of Fish and Wildlife, State Water Resources Control Board, and Department of Pesticide Regulation.

These new roles required each organization to create business processes and update technology systems to support new responsibilities. To assist with the necessary coordination and to ensure statewide alignment of



processes and technology, the state entities involved and CDT created a cross-functional and cross-agency team. The team met in a dedicated shared work space that allowed participants to craft a statewide architecture for the medical cannabis business, information and technology. This architecture represents the blueprints for how the state will coordinate the activities, movement and information sharing of information across all the involved state entities. The participants have found this to be incredibly useful as it ensured alignment of their approaches and optimized state assets, including industry knowledge, technology and innovative approaches.

Innovative Approach to Project Delivery and Procurement

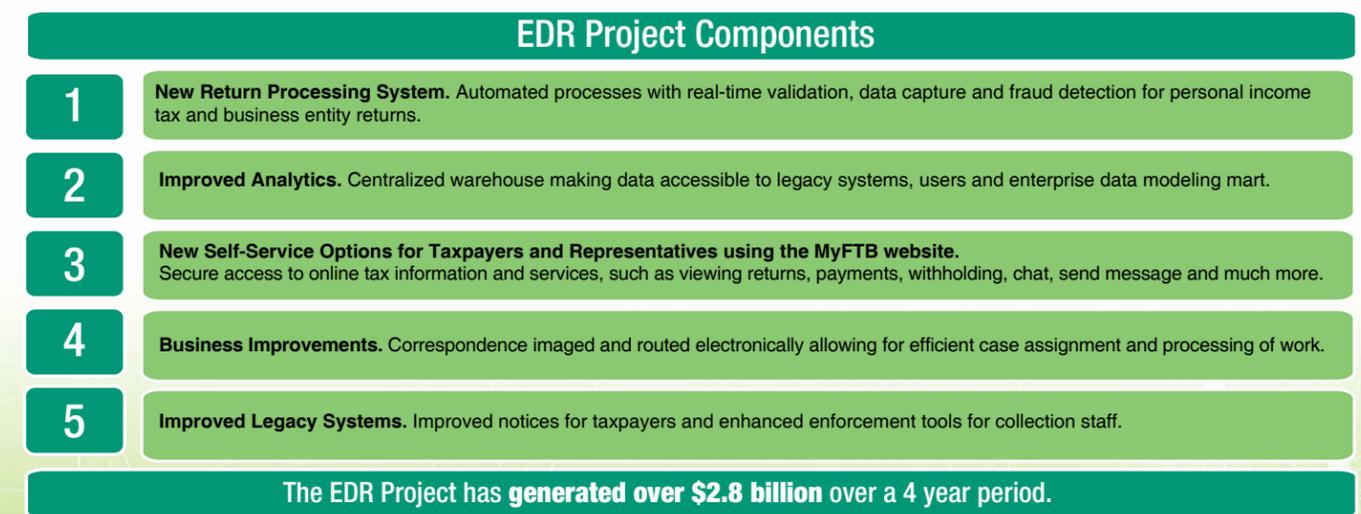
The state has made great strides in reducing risk in project delivery and ensuring successful business functionality. Some projects have relied on mature, existing approaches, while others look to innovative approaches to achieve success. Through partnerships that span state and federal government entities and vendor communities, a couple of projects have focused on the delivery of solutions with smaller scopes, shorter schedules and closer alignment of payment to benefits. These changes in the way the state procures technology solutions are yielding new interest from small companies that want to work with the state, but historically faced difficulty meeting the large number of requirements and taking on the associated risk. Smaller vendors with smaller solutions or teams of highly qualified individuals now can participate and propose solutions that would not have been eligible for consideration before.

The results have been rewarding – the number of responses to competitive procurements has grown by 20 percent, which gives the state a better range of approaches to evaluate for solving its most important business needs. From Agile development based on defined user stories, to contracting and only paying for small, fully-tested optimizations of business functionality, California can expect more value from IT projects – higher alignment with specific business needs and lower project risk.

Benefits-based Contracting Approach: Enterprise Data to Revenue

The State's Franchise Tax Board Enterprise Data to Revenue (EDR) project has leveraged a variety of project methodologies to modernize the legacy systems that support its most critical revenue-generating functions. The EDR project has made operations more efficient, improved customer service, increased self-service functions for taxpayers and bolstered transparency. It also has generated more revenue, an estimated \$4.7 billion in additional revenue over the project period and \$1 billion a year going forward. The project's IT vendor contract was structured as a shared risk and reward contract, which enabled the project to be entirely funded by the benefits it created. In other words, no outlay of cash was required by the state to fund the project.

The success of the project has been attributed to many factors. Most notably, the alignment of the vendors' benefits to the state's needs, enabling both entities to work closely toward shared goals, and effective state-vendor collaboration and knowledge transfer. Rigorous planning at the beginning of the project, as well as at the start of each new project phase to confirm goals, objectives roles and responsibilities, also contributed to its success. The project kicked off on July 1, 2011 and was completed on December 31, 2016.



The five major components of Franchise Tax Board's Enterprise Data to Revenue Project.



CDT, in partnership with the Department of General Services, established a Vendor Advisory Council which brings together a cross-section of over 30 vendors to weigh in on IT procurement, the state's services portfolio, emerging initiatives, as well as other relevant topics. This council represents a variety of businesses of all sizes and industries – from system integrators to telecom companies. The council formally kicked off its first meeting on September 1, 2016.

Did You Know?

In 2016, a partnership between the California Health and Human Services Agency, Office of Systems Integration (OSI), Department of General Services (DGS) and CDT created the Agile Development Prequalified Vendor Pool which increases state entities access to competent, user-centered Agile development resources while reducing solicitation time and cost. To prequalify for the pool, vendors were required to demonstrate their team's capabilities and processes through the delivery of a working digital service prototype. In early 2017, CDT, in partnership with OSI, will issue a solicitation to refresh the Agile Development Prequalified vendor pool.

Incremental Legacy Modernization: Debt Management System

The State Treasurer's Office Debt Management System (DMS) is the official book of record for the state's debt and is integral to the Treasurer's (STO) debt management program. The existing system is used to track the state's outstanding debt, calculate debt service payments, validate the authority to issue debt, and monitor certain trustee functions.

The DMS II project awarded a contract in May 2016 to modernize the legacy system and enable adaptation of evolving business needs, increase system functionality, and enhance supportability and flexibility. Instead of the common "rip and replace" approach or large single-vendor project, STO is contracting for smaller discrete efforts called "Optimization Initiatives," each of which will deliver working and tested system enhancements.

Each initiative adds immediate value to the existing system, limiting overall project risk. This strategy is in line with project best practices highlighted in the State of California Recommendations to Improve Large Information Technology Procurements: *A Roadmap for Success in California - Taskforce on Reengineering IT Procurement for Success, August 2013*. As of 2016, STO is in the process of completing its first Optimization Initiatives. The project is scheduled to be completed by December 2018.

Agile and Modular Procurement: Child Welfare Services New System

The Child Welfare Services New System (CWS-NS)⁴ project was initiated to improve the state and local counties ability to serve at-risk children. The new system will support evolving child welfare programs, business processes and legislatively-mandated improvements focused on protecting the safety of children and families. The project is leveraging a modern approach for product design, development, and continuous improvement including:

Modular Procurement – Developing the project as a collection of smaller projects rather than a single monolithic, one-time solution which reduces the reliance on a single vendor and ensures utilization of open technology standards.

Agile Development Methodology – Uses rapid software prototyping and development, user-centered design, and continuous improvement concepts to develop minimum viable products.

Open Source Technology – Developing non-proprietary code that can be modified or extended by the state, and can be freely shared with other organizations to quickly provide working functionality.



PROVIDING SUSTAINABLE AND EFFICIENT BUSINESS ENABLEMENT SERVICES

California's IT services are critical to the business of government – from health care to fighting fires to protecting our environment. Enabling these mission-critical services requires a highly capable workforce and the use of innovative technology without exposing the state to excessive risk. The State of California is focused on maintaining and enhancing the expertise and relevance of our IT professionals through education, knowledge sharing and communities of interest. Additionally, scalable and flexible IT capabilities in the form of services allows California's leaders to spend more time focusing on business needs rather than on technical needs. The increase in operational continuity, agility and interoperability, coupled with a lower level of risk for state entities has enabled California to keep pace with the ever-changing demands of doing business.

Developing the Next Generation IT Workforce

The size and complexity of California requires knowledgeable IT professionals to support a 21st century government and beyond. The California Department of Human Resources (CalHR) reports that approximately 40% of the state's workforce will be eligible to retire in the next five years; in the coming year alone, they estimate 5-10% will retire, many in senior executive positions. The challenge puts a priority on recruiting, retaining, and building the capabilities of the state's greatest resource – its employees. CDT and its IT education partners throughout the state are championing the development of education and leadership programs to augment the wide variety of courses offered via classroom and eLearning environments to meet the dynamic needs of government IT professionals.

The successful Information Technology Leadership Academy (ITLA) is addressing the expected loss of IT leadership by grooming the next generation of senior executives. ITLA is critical to sustaining and maturing the state's IT workforce, while planning for leadership's successors. Students complete 15 courses including executive interview and presentation skills, legislative budget process for leaders, political skills and leadership branding and are exposed to some of the most respected executives in the state. Since ITLA's inception, 575 IT professionals have graduated; of those approximately 30 graduates have gone on to become Chief Information Officers of state departments, with many others promoting to other senior ranks within the state workforce.

In 2016, CDT hosted 1,435 state IT staff at its Training and Education Center for a variety of training sessions. This year, 13 new course offerings were added to CDT's training curriculum from virtualized infrastructure management to mainframe operations. CDT also offered a number of complimentary informational and educational seminars as part of its Project Academy Series, a sequence of seminars to help prepare the state IT workforce to deliver successful projects.

ITLA won 2016 Best of California Award for the Most Innovative IT Workforce Initiative



The California Public Employees' Retirement System (CalPERS) has launched an initiative that provides a professional skills repository and networking site named *illuminet* (from "illuminate" and "network"). The voluntary repository enables project leaders to find skillsets that they need from across the organization, and participants are able to request a mentor that closely matches their own skills and interests. The tool is currently rolled out across CalPERS' IT branch and is targeted for expansion to the rest of the organization.

CalCloud has on-boarded

 
42 IaaS **88** SaaS

customer organizations.



Mission - Offering cost-effective cloud solutions that provide state entities, local governments, and educational institutions with convenient, on-demand access to a shared pool of configurable resources.



Customer Benefits

- Lower Cost Model
- Rapid Availability
- Secure Hosting
- Multiple Service Offerings
- Technology Recovery
- No Capital Expenditures
- Improved Flexibility

Sustainable Approach to Technology Delivery

In an increasingly digital era, state government and consumers of IT services expect greater agility and increasing returns on their technology investments. They want modern, reliable, secure, cost-effective and innovative solutions for the people and organizations they serve. Cloud technologies continue to be a primary focus due to their:

- Rapid provisioning of technologies to match changing program needs
- Minimization of upfront capital costs
- Better control of financial risks
- Reduced security concerns or other limitations

CalCloud has enabled rapid acquisition of products by leveraging pre-existing contracts and moving the responsibility of uptime, upgrades and security to vendors. Through CalCloud, CDT is establishing a channel between IT service providers and business partners to provide opportunities to meet program needs in more ways than currently possible.

CalCloud⁵ currently offers access to cloud-based software solutions hosted by private service providers in five areas – Project and Portfolio Management, IT Service Management, Customer Relationship Management, Email, and Office Productivity – and is expanding to other lines of business such as offsite backups, disaster recovery, and digital / e-signatures.

CDT is also expanding existing “as-a-service” offerings including Infrastructure as a Service (IaaS), Platform as a Service (PaaS) and Software as a Service (SaaS). This places greater emphasis on delivering the highest quality business value to customers while keeping the underlying technologies transparent, ubiquitous and interchangeable. This model provides scalability, allowing customers to leverage services when needed, and affords the opportunity to consolidate services that allow for a proportionate saving in costs gained by increased productivity. CDT and the Department of General Services partnered to further this approach by developing policy that requires all state entities to use commercially available SaaS services provided through CDT for office productivity tools, ensuring that the state maximizes the benefits of these services.



The benefits of selecting Cloud Computing to deliver information technology services.

Transition to CalCloud

The California Department of Corrections and Rehabilitation (CDCR) implemented its Business Information Solution (BIS), an enterprise-wide system that streamlines the Department’s administrative processes including financial reporting, supply chain, and human resources management. CDCR subsequently decided to migrate BIS to CalCloud, the state’s primary Cloud platform.

To facilitate this transition, CDCR and CDT leadership invested state staff resources to execute this migration and establish a capable team of experienced individuals that can be used for all future migrations to CalCloud. This project employed a first-of-its kind recruitment and training methodology for state staff to accomplish a large system migration, yielding an organic and sustainable capability within the state.

“Rather than seek out vendors to get these different skillsets, we built out the capability to do it ourselves.”

– Paul Smith (CDCR)

Protecting the Public from Environmental Hazards

The California Department of Toxic Substances Control commenced development of an online portal where authorized users can access information about chemicals in consumer products. The project, centered on the Safer Consumer Products Information Management System (CalSAFER), complies with California’s 2013 Safer Consumer Products regulation which requires manufacturers to seek safer alternatives for harmful chemical ingredients. The portal provides a searchable database of chemicals to help consumers and businesses identify what is in the products they buy for their families and customers. Now in 2016, the project is more than 90% complete.

Additionally this year, California Environmental Protection Agency (CalEPA) released a new Environmental Complaint System, a platform for the public to report environmental concerns. The application uses geolocation technology and provides users the ability to upload pictures, videos, and documents. Depending on the nature of the concern, complaints can be investigated by one of CalEPA’s boards or departments or routed to one of the 400+ state or local agencies responsible for investigation. The tool provides CalEPA with greater ability to address and track environmental concerns reported into the system and to identify trends and clusters of concern.

ENDNOTES

- 1 California Health & Human Services Agency, Data Playbook, website, <https://github.com/chhsdata/dataplaybook>
- 2 California Department of Technology, Technology Letters, Technology Letter 16-09, website, http://www.cio.ca.gov/Government/IT_Policy/TL.html
- 3 California Department of Technology, IT Project Oversight and Consulting Division, IT Project Tracking, website, http://www.cio.ca.gov/Government/IT_Policy/IT_Projects/
- 4 Child Welfare Services/Case Management System, website, <https://www.hwcws.cahwnet.gov/default.asp>
- 5 California Department of Technology, Office of Technology Services, CalCloud, website, <http://www.servicecatalog.dts.ca.gov/services/cloud/calcloud/calcloudoverview.html>
- 6 State of California Sustainable Buildings, website, <http://www.greenbuildings.ca.gov/>



To support the governor’s energy conservation goals, the state has reduced its power utilization efficiency in large data centers to 2.06 (compared to an ideal value of 1.0) with plans to increase that efficiency to 1.5 in 2017.

Did You Know?

You can track state departments’ progress towards Governor Brown’s [Executive Order B-18-12](#) to shrink the environmental impact of the state’s buildings and save taxpayer dollars at greenbuildings.ca.gov⁶. The site reports on efforts to reduce 20% of grid energy use by 2018 and reduce 20% of water usage by 2020.

Additionally a partnership between CalEPA and the Governor’s Office created the California Climate Investments online tool, which informs the public on how funds from California’s climate and energy programs are being spent.



California
DEPARTMENT OF TECHNOLOGY

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